Wildlife Diversity Program

Nongame

The 2002-03 state budget included $550,000 of lottery revenue funds for the WV Wildlife Diversity Program. However, due to the budget reduction, total funds available to the program were $533,500. The wildlife license plates (rose-breasted grosbeak and white-tailed deer) generated $257,850 for one-year plate sales, and $135,440 for two-year plate sales, for a total of $393,290. This represents 26,219 plates sold. The appropriation for the 2002-2003 year from the license plate account was $367,640. Funds are now being used to match federal funding

As a result of a federal apportionment in the Interior Appropriations Bill of 2000, West Virginia was eligible for about $480,000 under the Wildlife Conservation and Restoration Program. A grant proposal was submitted and approved. Projects included assisting the Partners in Flight Program, initiating the new Important Bird Areas Program, establishing warm and cool season (largely) native perennials on selected WMAs across the state, publishing a mushroom field guide, updating and developing new brochures, enhancing the State Wildlife Center and selected WMAs with interpretive trails and signs and creating wildlife demonstration areas, creating and updating educational displays and programs, enhancing the Greenbottom WMA for watchable wildlife activities, and funding turtle studies to complete work on a West Virginia Herpetological Atlas.

Three new OWLS (Outdoor Wildlife Learning Sites) schools were added this year, bringing the total to 98 schools in 41 counties. Application booklets were updated and distributed at the annual science teachers' conference as well as upon request. Many schools were assisted in the writing of grants and several educational events were attended to inform schools about OWLS.

Thirteen (13) research grants and one cooperative project grant were awarded funding this year totaling $66,979. Some of the studies/projects included research on the green and cow knob salamanders, leopard frogs, Allegheny woodrat, dragonflies of the Elk River and shale barren rockcress; distribution of a rare crayfish and map turtles; checklist of spiders, and nature curriculum development for eastern panhandle schools.

Work continued on a statewide reptile and amphibian atlas project, focusing on turtles this year. Several new state records have been found. The information gathered from this study will be used in the publication of the second edition of *The Amphibians and Reptiles in West Virginia*, authored by Dr. Thomas K. Pauley.

The Mushrooms of West Virginia and the Central Appalachians by Bill Roody was published by the University of Kentucky Press. Approximately 700 copies of this full-color field guide were distributed to public schools and libraries across the state. Three issues of the "West Virginia Wildlife Diversity News" were produced and mailed to about 7,500 individuals and institutions. This newsletter appeared on the WVDNR Web site, along with copies of the Wildlife Diversity Program's project application booklets and other information on the program. Staff worked on updating information for the WVDNR Web site. The 2003 WV Wildlife Calendar was published, bringing in about $50,000 for the program. The 2004 calendar is in press. Numerous magazine articles, news releases and TV spots to inform the public about program activities and nongame wildlife in general were produced. Brochures on West Virginia bats, snakes and turtles and lizards were updated and reprinted. A new brochure was created on the tiger beetles of the state.

The 20th annual Wildlife Diversity Weekend was held at Blackwater Falls State Park June 6-8, with about 200 people attending the event. Several new interactive educational displays were developed for use at events such as fairs and festivals, Hooked on Fishing Not on Drugs Expos, Wildlife Diversity Day at the State Capitol, National Hunting and Fishing Days Celebration, Youth Environmental Day, Earth Day, and educational events at schools.

There are now 126 individuals and businesses that have been certified for the Wild Yards program, which received signs and certificates for their efforts. Many presentations on the use of native plants in landscaping for wildlife and

the Wild Yards program were made to groups. Staff worked with many landowners to provide or enhance habitat for wildlife.

Surveys were conducted (many at wildlife management areas and hatcheries) for birds, rare plants, reptiles and amphibians (including frog call routes), fish, crayfish, mussels, small mammals, butterflies, dragonflies and cave invertebrates. Assistance was provided to several endangered species projects and rare species surveys including the peregrine falcon, bald eagle, loggerhead shrikes, Allegheny woodrat, bats, mussels and northern flying squirrels.

Staff continued to facilitate the state's Partners in Flight (PIF) working group. Two meetings were held, one in the fall and one in spring. Two issues of the PIF newsletter were produced and mailed to about 500 individuals. In cooperation with the Cornell Laboratory of Ornithology, staff coordinated a golden-winged warbler atlas project. Several Breeding Bird Survey routes were run, as well as the establishment and monitoring of many point count routes throughout the state. Surveys were conducted for grassland birds and nest boxes were placed in suitable habitat for saw-whet owls. Protocols are being established for monitoring night birds and water birds. Data is being collected for barn owl nests and some threatened nests are being relocated.

Planning was begun for a West Virginia Master Naturalist's Program. Interested individuals will take a specified number of core courses and electives, followed by volunteer hours to be certified as a Master Naturalist. The program will provide trained individuals for a statewide speaker's bureau, watchable wildlife trail development and maintenance at state wildlife management areas, assistance with various field projects and interpretive programs at state parks.

Endangered Species

Although the peregrine falcon was removed from the federal list of endangered species in August 1999, this rare bird is still monitored closely by Program personnel. More than 20 people, including several volunteers, participated in a one-day "cliffwatch" early in April to monitor cliffs that are potential nesting sites for these birds. No falcons were observed in the New River Gorge and a lone female was observed along North Fork Mountain. Follow-up surveys failed to confirm any nesting falcons in 2003. Two new bald eagle nests were discovered this year. These nests and the 11 nests active in 2002 were monitored. Cold and wet conditions during the spring and early summer resulted in poor productivity in 2003, with some nests failing to produce any young this summer.

West Virginia northern flying squirrel nest boxes were monitored at 16 sites to obtain data on the distribution and population trends of this rare mammal. An additional 60 nest boxes were erected on Snowshoe Resort property to obtain data for a Habitat Conservation Plan. All capture data on this species, including captures by other state and federal agencies and other researchers, were entered into the Program's database and map files. Currently, these data are being converted to GIS layers. The graduate student conducting a radio telemetry study on the squirrel at Kumbrabow State Forest and adjacent Mead-Westvaco lands tracked one male squirrel for several weeks in spring 2003.

Surveys for hibernating endangered bats were conducted to track population trends and locate new hibernation sites. Winter surveys were conducted at 12 caves in four counties. This year's surveys were scheduled to examine most of the state's significant endangered bat caves, but large accumulations of snow and ice made it dangerous to enter some of these caves. Hellhole, the state's most important bat cave, could not be surveyed. In June, female Virginia big-eared bats were censused at known maternity colonies. Night vision equipment was used to count these cave-dwelling bats as they left their roost to feed in the evening. A total of 5,945 bats was tallied at 10 maternity caves. This represents a slight increase over the 5,897 bats counted at these caves in 2002.

Mist netting surveys were conducted to provide information on the distribution of bats, especially the Indiana bat, during the summer months. WVDNR biologists conducted surveys on Burnsville WMA, Elk River WMA, Hillcrest WMA, Sugar Grove Naval Base, and Tomlinson

Run State Park. Data from bat surveys conducted by WVDNR personnel and others were entered into the Program's databases and are being converted to GIS layers.

Eleven (11) new locations were found for the federally threatened flat-spired three-toothed land snail. The new sites are on the WVDNR's Snakehill WMA. Potential habitat for this snail (rock outcroppings) on Coopers Rock State Forest were mapped. In coordination with the U.S. Fish and Wildlife Service (USFWS), freshwater mussel surveys were conducted on the lower 12.3 miles of the Elk River. More than 2,650 mussels were handled. Although three federally endangered mussels occur in the Elk River, none were found in this portion of the river. Other mussel surveys were conducted in Jackson and Wood counties at bridge replacement sites identified by the WV Division of Highways; no endangered species were found. Program personnel continued to investigate mussel kills and to assist the USFWS with zebra mussel monitoring.

Surveys to locate new populations of the threatened Cheat Mountain salamander continued; much of the work done this year was focused on providing data for the Snowshoe Resort Habitat Conservation Plan. Additional data were gathered in a study to examine the effect of buffer zones around salamander populations. This information will help define the buffer zone needed to protect salamander populations.

Three competitive federal grants were received from the USFWS this year. The first grant will provide funding to gather data on and prepare a Habitat Conservation Plan for lands in Blackwater Canyon. The second grant will provide additional funds for work on the Snowshoe Resort Habitat Conservation Plan. A Recovery Habitat Acquisition grant was received to assist the WVDNR in purchasing lands in Cheat River Gorge that provide habitat for the flat-spired three-toothed land snail.

Numerous information requests from the public were answered, and popular articles were written on the state's threatened and endangered animal species. Program personnel reviewed WVDNR projects to assure compliance with the federal Endangered Species Act and assisted the USFWS with Section 7 consultations. Private landowners were assisted with the management and conservation of rare species on their property.

Natural Heritage Program

Scientific Collecting Permits - During FY 2003, 260 Scientific Collecting Permits were issued for a variety of projects including endangered species surveys and monitoring, graduate research, coal industry-related surveys, a hummingbird banding project and for teaching purposes. Three permit applications were denied.

Data Requests - A total of 877 data requests was reviewed during the fiscal year. These requests included 418 highway projects, 98 coal mine and quarry reviews, 17 Abandoned Mine Lands projects, and miscellaneous reviews consisting of infrastructure projects, subdivisions, US Forest Service project reviews, etc.

Biological and Conservation Data System (BCD) - About two dozen new records, many of them plant communities, have been added to the database. In addition, about 100 records for plant and animal occurrences have been updated. BCD was updated with global information from NatureServe in July 2002.

Ecological Communities - Highlights of ecology field work for the fiscal year included: surveys of communities on limestone in the Smokehole and Cacapon drainages, initiation of forest sampling across elevational and geological gradients in a roadless area of Cheat Mountain, surveys of old growth forests in the Smokehole and Anthony Creek drainages and Pipestem State Park, and surveys of spruce forests in the vicinity of the Highlands Scenic Highway.

Cooperative ventures included: working with NatureServe on development of an ecological systems classification for the lower 48 states, on classification of ecological communities (associations) in the National Park units in the National Capital Region (includes Harper's Ferry National Historical Park in WV), working with The Nature Conservancy on site planning for matrix blocks in the Cen-

tral Appalachian Ecoregion, and working with the National Park Service on conservation planning for the New River Gorge National River.

Proposals submitted for outside funding included: classification of high elevation wetlands in the Allegheny Mountains, submitted to EPA; vegetation mapping of Cranberry Glades, submitted to NPS National Natural Landmark Program; and plot sampling in Harper's Ferry National Historical Park.

Botany - The *Checklist and Atlas of the Vascular Flora of West Virginia* was completed, has been reviewed by all co-authors, and will be published in the second half of 2003.

A number of federally threatened and endangered plant species populations were monitored in the past year, including 23 running buffalo clover sites. There were no significant increases in the number of rooted crowns at any of the sites. One site saw a decrease in numbers of plants, and plants at one site were lost due to road grading. Surveys for new populations were conducted in the Cheat Gorge in Preston County. The habitat appeared marginal and no running buffalo clover was found.

The Shale Barren Rockcress (*A. serotina*) Recovery Task Force and the Shale Barren Protection Strategy Group devised a monitoring plan for the Rockcress. The plan, which called for monitoring this species at several sites across its range between 15 August and 5 September each year, was modified to limit the human impact of repeatedly crossing the barrens.

Northeastern bulrush (*Scirpus ancistrochaetus*) appears relatively stable at most sites.

Virginia spiraea (*Spiraea virginiana*) populations are currently found on four rivers in West Virginia (Bluestone, Gauley, Greenbrier and Meadow) and one wet meadow. One site was impacted by an inadvertant spraying of herbicide. New population surveys were conducted along the Meadow and Buckhannon rivers. No spiraea was found, although the habitat appeared good.

The rare moss *Syntrichia ammonsiana* (Ammon's' Twist Moss) was found on limestone bluffs above Indian Branch in Pipestem State Park, Mercer County, West Virginia. The only other population of this species known from West Virginia is at Falls of Hills Creek in Pocahontas County. During the search for this moss, all nearby species were collected to document associations and to increase knowledge of the bryophyte flora of West Virginia. A total of 60 species was collected (50 mosses and 10 liverworts), including five state records. The Falls of Hills Creek population was monitored in June and October, 2002. Digital photographs of all populations were taken this year to assist in making comparisons of population status between years.

Harperella (*Ptilimnium fluviatile*) fluctuates from year to year in the number of sub-populations and the estimated number of plants seen along the stretches of historically suitable habitat on Sleepy Creek, Back Creek and the Cacapon River. The number of plants extant on the Cacapon River and Sleepy Creek is alarmingly low compared to values seen within a decade. The observations made in 2002 indicate that the world's largest populations of Harperella may be in serious peril on these rivers. The discovery of two additional small new occurrences of Harperella on Back Creek within the past decade is encouraging. Blue-green algae blooms indicative of nitrogenous pollution and an increase in siltation in these rivers may be cause of the decline.

In addition to these major projects, the botanical group has also been involved in a number of outreach and education tasks, most notably the Blackwater Falls Wildflower Pilgrimage and the Wildlife Diversity Weekend. Botanists have participated in the Invasive Species Working Group and met with The Nature Conservancy as cooperative consultants regarding the status of rare, threatened and endangered plant species within several ecoregional conservation action areas.

Floristic surveys of Panther State Forest and Chief Cornstalk WMA were undertaken April-September 2002. At Panther, 371 species of vascular plants and 103 species of fungi were documented, including 205 county records, 3 state records and 7 rare species. Cornstalk yielded 304 species of

vascular plants and 66 fungi, including 201 county records and 6 rare species. Many bryophytes and lichens were collected and most await identification.

A Community Conservation Assessment for Mid-Appalachian Shale Barrens for the U.S. Forest Service was completed summarizing knowledge to date of shale barrens and shale barren flora, with an emphasis on conservation.

A contract with the WV National Guard was initiated to develop an invasive plant species management plan for Camp Dawson in Preston County. A contract with the National Park Service (NPS) was started to resurvey the rare riparian plant species within the Gauley River National Recreation Area to aid in their development planning. A contract to survey several stretches of abandoned railway rights-of-way in Morgan County for rare species for the NPS was completed.

Fungi - Approximately 1,000 collections of WV fungi were processed, entered into the database system at the Elkins Operations Center and accessioned into the Davis and Elkins College Herbarium. There were approximately 30 new state records. Collecting was done in 22 counties, including Boone, Lincoln, Logan, Hardy and Upshur counties, where little or no collecting has been done in the past.

Zoology - The two-year contract with Sugar Grove Naval Base was completed with a bat survey in the fall of 2002. Reports were written and distributed to Navy personnel. In addition to the previous contract, another bat survey was conducted on Sugar Grove in July 2003, with one scheduled for the fall.

Animal ranks were reassessed and assigned as needed for herps, mammals, butterflies, crayfish and other invertebrate species. To assist in gaining needed species information and transforming it to a useable form, a contract was designed to enter approximately 8,000 crayfish records into a database. Contracts to obtain further information on rattlesnake distribution in West Virginia were also completed.

Dragonfly species were ranked for the first time based on number of records and rarity. Several new sites were surveyed for dragonflies, including Altona Marsh and the Monongahela River. The Elusive Clubtail, a species that had not been recorded in West Virginia since the 1960s, was discovered on the Ohio River. The number of dragonfly records entered into the database increased to nearly 5,600.

Surveys for various animal species were completed for Cornstalk WMA and Panther State Forest. One hundred and eleven (111) species of mammals, birds, reptiles, amphibians, butterflies, and dragonflies were documented from Cornstalk WMA. One species of concern, the Whip-poor-will, was found to be breeding there. Fifty-one (51) species were documented at Panther State Forest including the following species of concern; Allegheny woodrat, Worm snake and the Green and Black Mountain salamanders.

Fisheries - A Regional Environmental Monitoring and Assessment Program (REMAP) grant was received from US Environmental Protection Agency for $380,000 to develop a fish Index of Biotic Integrity for West Virginia's wadeable streams. Surveys of fish, water quality and habitat were conducted at 64 sites throughout the Central Appalachian Plateau Region during the second collecting season of 2002. One full-time division biologist and six college interns performed this work. The project will be completed and a final report written by the end of 2003. The REMAP project is a cooperative effort as three US EPA offices (Duluth, Corvallis, and Cincinnati) and the State's Division of Environmental Protection are all participating with the Division of Natural Resources to complete this endeavor.

Acid Water Studies

Data from this study are used to determine long-term trends of the impact of acid precipitation on about 50 selected streams. During this past year, water quality, fish and macroinvertebrate data were collected during the fall and spring. Staff provided technical assistance on development of proposals, direction of research and participation on graduate student committees.

Limestone Fines Study

The Wildlife Resources Section treated 23 streams and three lakes with sand-sized limestone fines to neutralize

stream acidity. An additional 29 tributaries in the Middle Fork of Tygart Drainage and two tributaries of Blackwater River (Beaver Creek and North Fork) were treated in cooperation with the Division of Environmental Protection (DEP). Wildlife Resources also assisted Plum Creek (formerly The Timber Company) with treatment of the South Fork of Cherry River and two of its tributaries plus three tributaries of Gauley River. These treatments restored or improved trout populations in approximately 225 miles of stream. Staff provided technical assistance to DEP for the treatment of Laurel Run of Cherry and also provided technical assistance to Trout Unlimited regarding treating acid streams.

Limestone Drum Treatment

The limestone drum neutralization stations on Blackwater River (DEP funded), Otter Creek and North Fork and Dogway Fork of Cranberry were operated. These stations are successfully neutralizing acidic flows in about 50 miles of stream. Trout reproduction has occurred in all four streams.

Mussels

Staff conducted a water quality and mussel habitat assessment of the Monongahela River. Water quality was collected and analyzed at 13 sites once a month from June through October, and 10 sites were surveyed for mussels and mussel habitat. A final report was submitted to the National Fish and Wildlife Foundation and presentations were presented at the Tri-state Fisheries Conference and the WV Chapter of the American Fisheries Society.

Staff investigated reports of mussel kills on the Cacapon River and North Fork Hughes, coordinated with the USFWS, and U.S. Army Corps of Engineers with respect to maintenance dredging operations and disposal of dredge material in relation to mussel beds on the Ohio and Kanawha rivers, conducted a half-day workshop on mussel identification and ecology, provided training to 13 Wildlife Resources employees, nine Department of Transportation (DOT) employees and one federal highways employee, coordinated with DOT on bridge projects and made several site reviews, assisted with zebra mussel monitoring on the Ohio River, continued assistance with the Ohio River and Tug Fork mussel kill analysis and continued preparation of the *Mussels of West Virginia* book and key.

Technical Support Unit

Aquatic Habitat Conservation

Personnel from the Technical Support Unit were very active during the year coordinating and participating in efforts to assess and restore aquatic habitats in the state. Staff attended training courses in natural stream channel design, participated in the field reconnaissance of degraded streams, developed and submitted grant applications for inventory and research projects, and coordinated the implementation of such projects.

Coordination was provided for an array of Wildlife Resources Section activities focused upon the restoration of the Shavers Fork watershed. Using funding from the National Fish and Wildlife Foundation, Trout Unlimited and others, a project to collect sediment data, stream morphology and land use data on the Upper Shavers Fork was initiated.

Coordination continued on an expanded state effort to restore streams damaged by acid precipitation and acid mine drainage.

Planning

The planner continued to coordinate the revision of the Wildlife Resources Section Strategic Plan. This process is integrated with planning for expenditure of expanded federal reimbursement for fish and wildlife management activities. Financial planning for the Wildlife Endowment Fund was another area of significant emphasis during the year.

Coordination

Coordination continued on the following U.S. Army Corps of Engineers projects: Winfield Locks and Dam Rehabilitation Mitigation Project, Marmet Locks and Dam Rehabilitation, Bluestone Dam Safety Assurance Project, Bluestone Dam Hydropower Development Study, Greenbrier River Flood Damage Control and London Locks and Dam Rehabilitation.

Continued action (e.g., impact analysis, development of mitigation, appeals, litigation, relicensing) was taken on each of the following proposed or licensed hydropower